

Board of Audit and Inspection of Korea

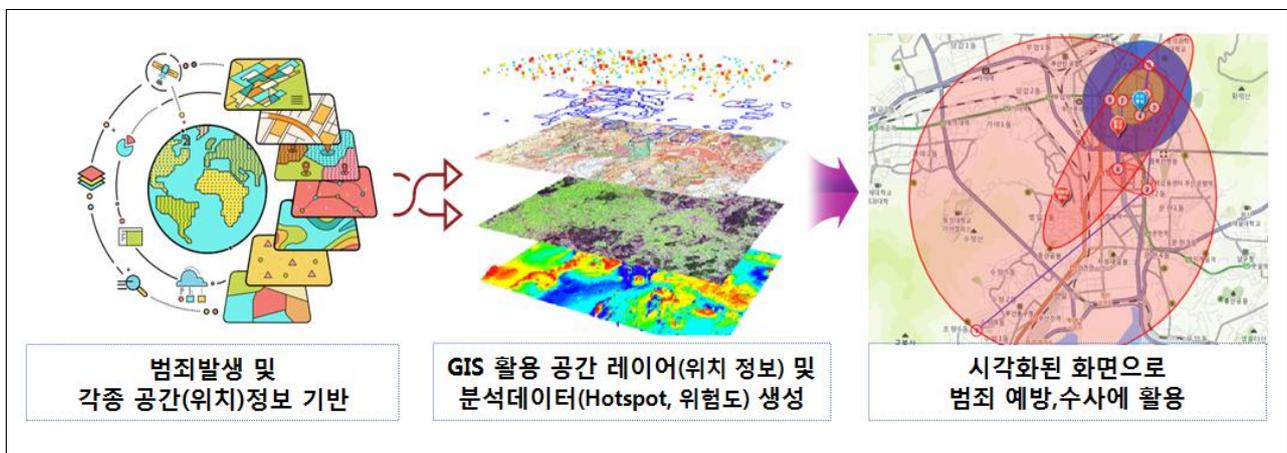
Notice

Title	Insufficient Utilization of Data on Crime Hot Spots When Analyzing and Designating New CCTV Locations
Organization concerned	① Ministry of the Interior and Safety ② National Police Agency
Organization providing corrective actions	① Ministry of the Interior and Safety ② National Police Agency

1. Overview

The National Police Agency of Korea (KNPA) established the Geographic Profiling System that combines and analyzes existing crime data and various spatial information on the Geographic Information System (hereinafter referred to as ‘GIS’) in 2009, as shown in Figure 1, to establish scientific and systematic grounds of crime analysis. This system has been used to analyze frequent crime areas (hereinafter referred to as ‘hot spots’).

[Figure 1] Overview of Geographic Profiling System



Source: Materials submitted by the KNPA

[Key for Figure 1:](#)

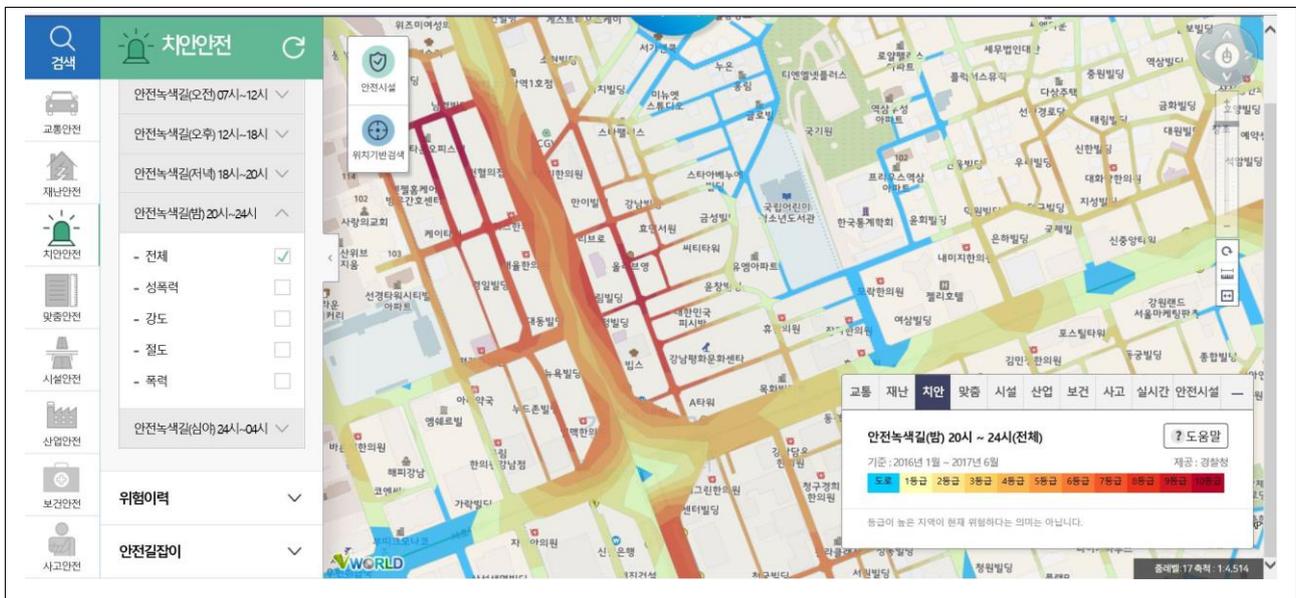
범죄발생 및 각종 공간(위치) 정보 기반: Based on crime occurrences and various spatial (location) information

GIS 활용 공간레이어 (위치 정보) 및 분석데이터 (Hot spot, 위험도) 생성: Creating space layer (location information) with GIS utilization and analysis data (Hot spot, risk level)

시각화된 화면으로 범죄 예방, 수사에 활용: Preventing crimes with visualized screen, utilizing investigation

The hot spot information has statistical characteristics, which are marked on the GIS by designating the details of various crimes by type and region into numbers and grades. The KNPA has released this information to the general public by providing and marking¹ it on the daily safety map system of the Ministry of the Interior and Safety (MOIS) as shown in Figure 2, since 2015.

[Figure 2] Hot spot information in daily safety map



Source: Actual screen of the daily safety map of MOIS

2. Relevant Laws and Regulations, and Standards for Consideration

According to Article 3 of the Electronic Government Act and Article 41 of the Regulation on the Promotion of Administrative Efficiency and Collaboration, heads of administrative organizations are required to actively cooperate with the linkage of

¹On the daily safety map, the street information (e.g. roads, alleyways) is disclosed as ‘safe green roads’ as there are concerns for civil complaints in the case that certain buildings where crimes occurred can be precisely recognized.

information and communications network and the joint use of administrative information to enhance the work efficiency and the satisfaction of the citizens with administrative services.

To support a data-based scientific policy establishment, the MOIS established and provided the 16 Standards Analysis Models of big data in public areas (hereinafter referred to as the ‘Standard Analysis Models’) between 2016 and 2017. Among the models, the model for CCTV blind spots analysis is an essential element in figuring out how often crimes actually occur. This model identifies areas with higher chances of crimes by combining and analyzing data of local governments, such as the installation status of CCTVs, street lights and security lights, the floating population at night, and the status of child facilities on the GIS, and accurately decides the order of priority in installing new CCTVs.

Therefore, it is necessary for the KNPA to share and provide hot spot information to help local governments analyze CCTV blind spots. To that end, the MOIS needs to make up for the analysis methods of the existing big data so that local governments can use the hot spot information to analyze the model for CCTV blind spots. This will allow the local governments to secure and utilize more accurate analysis results.

3. Issues Defined from Audit Results

In 2004, the KNPA set up its plan to share and provide the hot spot information with and to other organizations, such as the MOIS and local governments, in order to create smooth information sharing, eliminate barriers in government offices, and prevent crimes by establishing ² external linkage functions to the Geographic

²Contract price: KRW 766 million, Implemented by: Company C

Profiling System. Despite the plan, however, the KNPA has not provided the hot spot information as of November 2018 due to civil complaints regarding the leakage of the hot spot information.

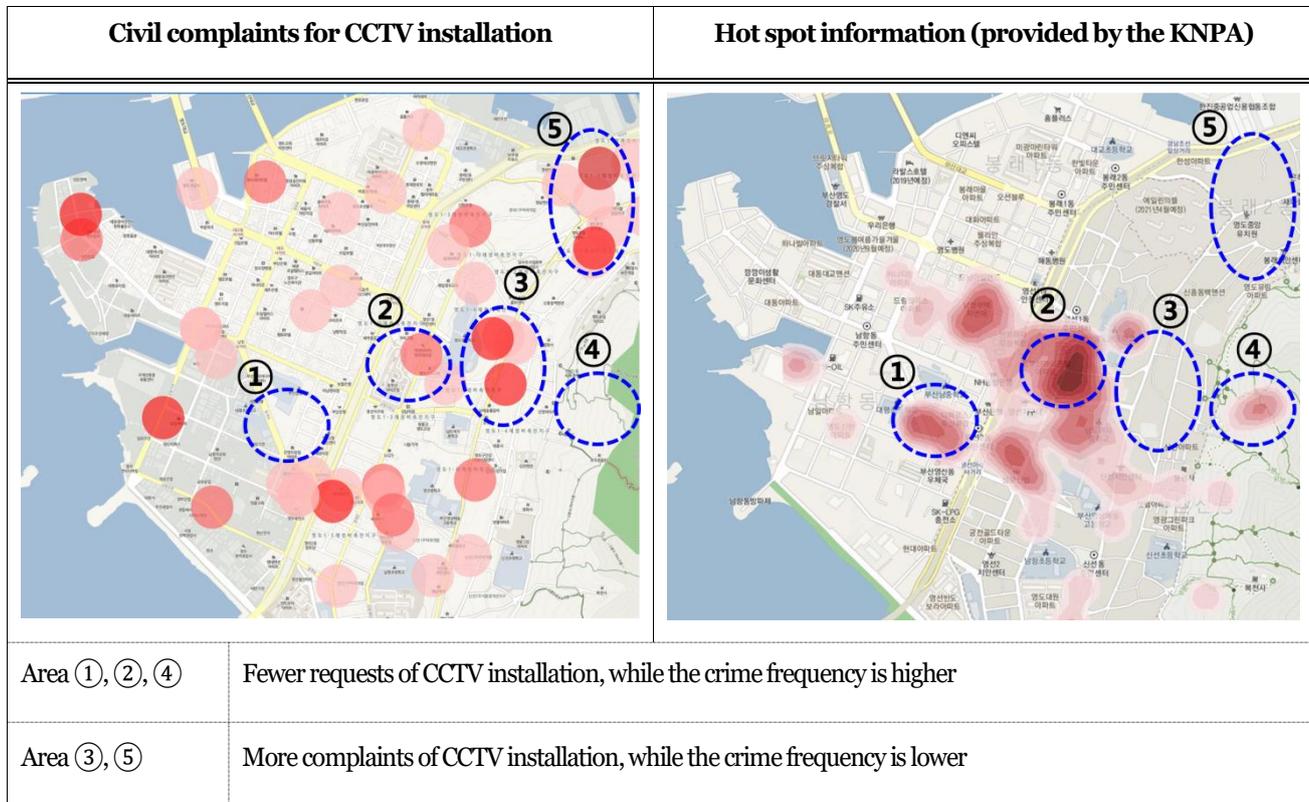
Instead, the MOIS started developing the model for CCTV blind spots and analyzing the civil complaints collected by each local government regarding the CCTV installations (e.g. requested location for installation, frequency of requests) instead of the hot spot information provided by the KNPA. Civil complaints can vary depending on individuals and regions, which can show differences in frequency of the actual crime outbreaks.

Accordingly, the Board of Audit and Inspection of Korea conducted the research during the audit period (October 29 – November 30, 2018) to verify whether the civil complaint information regarding the CCTV installation, which is being utilized for the Standard Analysis Models (e.g. requested location for installation, frequency of requests) and the hot spot information provided by the KNPA (e.g. the frequency of the actual crime outbreaks) match. The research took samples from Yeongdo-gu in Busan Metropolitan City³. The research results can be seen in Figure 3: There were fewer civil complaints for CCTV installations in areas where crimes actually occur. On the other hand, where there are few crimes recorded, there were many more complaints. This suggests that it is hard to replace hot spot information with the current practice (local governments' information) due to the discrepancy in information.

³Among all local governments that implemented the most recent analysis as of October 2018, Yeongdo-gu was selected as the district office that utilizes all 12 types of data (including private paid data, e.g. floating population information) that is included in the Guidelines for the Standard Analysis Models by the MOIS.

[Figure 3] Comparison between civil complaints for CCTV installation and hot spot analysis information

(Yeongdo-go, Busan Metropolitan City)



Note: The redder a spot is, the more complaints or requests of CCTV installations, or higher the crime frequency.

Source: Rearranged materials submitted by Yeongdo-gu, Busan Metropolitan City rearranged

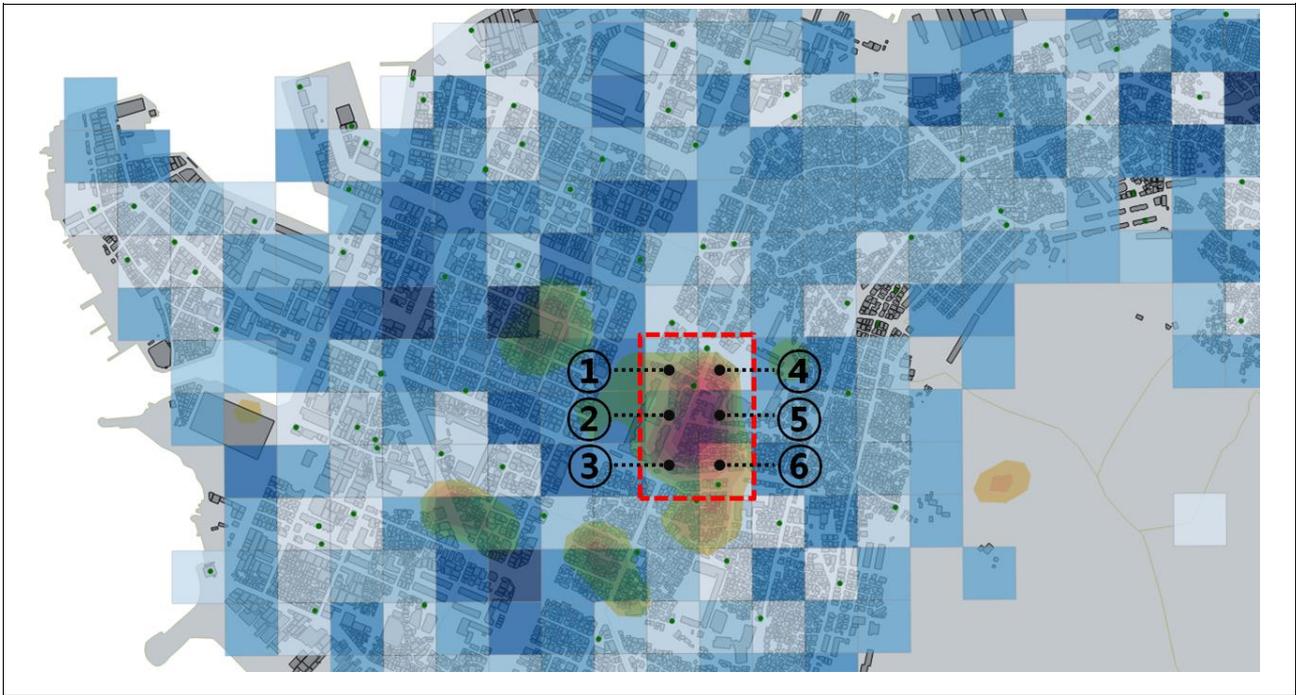
Moreover, Figure 4 shows the order of priority in CCTV installation based on the Standard Analysis Models among 6 unit areas⁴ with the highest frequency of crime outbreaks in Yeongdo-gu in Busan Metropolitan City (as of 2017): unit areas ①-⑥ should have more CCTV installations than any other area. Among the 1,614 total unit areas, however, unit areas ①-⑥ only ranked No. 221 or 628 in the order of priority for installation. This suggests that the order in priority of CCTV installations based on the Standard Analysis Models set by the MOIS does not fully reflect the frequency of

⁴Dividing Yeongdo-gu of Busan Metropolitan City into 1,614 unit areas (grid with the size of 100m×100m)

the actual crime outbreak. Thus, the KNPA needs to improve and supplement the system by utilizing the hot spot information.

[Figure 4] Comparison between hot spot information and analysis results of CCTV blind spots

(Yeongdo-gu, Busan Metropolitan City)



<Method of analysis>	<Analysis results>															
<ul style="list-style-type: none"> Yeongdo-gu of Busan Metropolitan City was divided and diagrammed into a total of 1,614 unit areas (grid with the size of 100m×100m) using the spatial information analysis program. Order of priority for CCTV installation was decided based on the big data analysis method of Standard Analysis Models Verified to see whether the order of priority for CCTV installation in areas with more crimes is higher by comparing the order of priority with the hot spot information, and checked the accuracy of the Standard Analysis Models 	<table border="1"> <thead> <tr> <th data-bbox="766 1220 1013 1332">Area No.</th> <th data-bbox="1013 1220 1444 1332">Order of priority for CCTV installations ^{note)}</th> </tr> </thead> <tbody> <tr> <td data-bbox="766 1332 1013 1388">①</td> <td data-bbox="1013 1332 1444 1388">493</td> </tr> <tr> <td data-bbox="766 1388 1013 1444">②</td> <td data-bbox="1013 1388 1444 1444">391</td> </tr> <tr> <td data-bbox="766 1444 1013 1500">③</td> <td data-bbox="1013 1444 1444 1500">221</td> </tr> <tr> <td data-bbox="766 1500 1013 1556">④</td> <td data-bbox="1013 1500 1444 1556">628</td> </tr> <tr> <td data-bbox="766 1556 1013 1612">⑤</td> <td data-bbox="1013 1556 1444 1612">317</td> </tr> <tr> <td data-bbox="766 1612 1013 1680">⑥</td> <td data-bbox="1013 1612 1444 1680">603</td> </tr> </tbody> </table>	Area No.	Order of priority for CCTV installations ^{note)}	①	493	②	391	③	221	④	628	⑤	317	⑥	603	
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Note: Order of priority for CCTV installations among all 1,614 unit areas (grid)																

Note: 1. The darker the area, the higher the order in priority [Range:] 
 2. The darker the area, the higher the number of crimes [Range:] 

Source: Reanalysis by the BAI and the MOIS based on the materials submitted by the KNPA and the Yeongdo-gu Office of Busan Metropolitan City

The MOIS continues to distribute and promote the Standard Analysis Models to local governments by reflecting the utilization performance of the models onto the joint assessment index of local governments. As of November 2018, there are 141 (58%) local governments that have experienced and utilized the analysis model for CCTV blind spots at least once among 245⁵ local governments.

Taking this phenomenon into consideration, it is difficult for local governments to achieve the original goal of effectively preventing crimes by utilizing the analysis model for CCTV blind spots, as it does not fully reflect the frequency of the actual crime outbreaks, due to the delay of CCTV installations in areas with higher chances of crimes. If this is applied to the administrations of local governments, there is concern for inefficiency in budget execution (e.g. budget for CCTV installation).

Opinions from Relevant Organizations

The KNPA expressed its opinion that the agency would provide the hot spot information as statistical information to local governments in the future without expressing any opposing opinions to the audit results of the BAI.

However, the KNPA added its suggestion that there should be measures to prevent any effects of stigma or drop in real estate prices due to the leakage of information and disclosure of the hot spot information among the regional areas.

⁵According to the current Local Autonomy Act and the Special Act on the Establishment of Jeju Special Self-Governing Province and the Development of Free International City, there are a total of 243 local governments including 17 metropolitan and provincial governments and 226 city and county governments while not including Jeju City and Seoguipo City (they are designated as administrative cities rather than local governments). They are included in this survey, however, as the cities are carrying out big data work. Thus, a total of 245 organizations are the survey respondents.

The MOIS expressed its opinion that the ministry would secure improvement measures by utilizing the hot spot information of the KNPA, including improving measures for the current analysis model for CCTV blind spots and preventive measures for information leaks without expressing any opposing opinions to the audit results of the BAI.

Recommendation to the MOIS and KNPA

The Board of Audit and Inspection of Korea would like to present **the Minister of the Interior and Safety** the following recommendation: The MOIS needs to secure measures to improve the Standard Analysis Models of public big data (the analysis model for CCTV blind spots) by utilizing the KNPA's information of areas with frequent crimes, which will enable each local government to prevent crimes more efficiently.

(Notice)

The Board of Audit and Inspection of Korea would like to present **the Commissioner General of the National Police Agency** the following recommendation: The KNPA needs to provide its information of areas with frequent crimes to the MOIS and each local government, which can then be used to check the frequency of the actual crime outbreaks, so that such information can be utilized for the Standard Analysis Models of public big data (the analysis model for CCTV blind spots) by the MOIS. **(Notice)**